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[US/US]; One Procter & Gamble Plaza, Cincinnati, OH  
45202 (US).

(72) Inventor: VOLPENHEIN, Daniel, William; 4769 White Blossom Boulevard, Mason, OH 45040 (US).

(74) Agents: REED, T., David et al.; The Procter &amp; Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217 (US).

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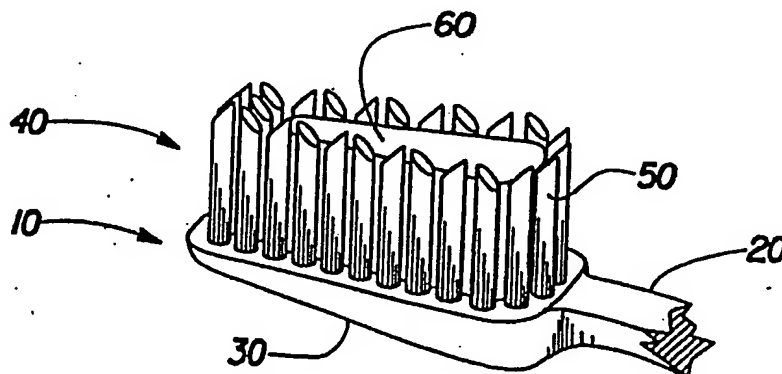
*With international search report.**Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: TOOTHBRUSH WITH COMBINATION OF BRISTLES, SOFT CLEANSING PAD, AND/OR POLISHING FINGERS

## (57) Abstract

Disclosed is a toothbrush with bristles and a relatively soft cleansing pad, or a soft polishing member. The brush is suitable for massaging the gums, and enhanced cleaning of the teeth. The bristles may include a thermoplastic elastomer having a Shore A hardness of at least 30. The bristles may be of a thermoplastic elastomer of polyetheramides, polyesters,

styrene-ethylene-butylene-styrene block copolymers, styrene-butadiene-styrene block copolymers, styrene-isoprene-styrene block copolymers, polyurethanes, polyolefin elastomers, or mixtures thereof. The thermoplastic elastomer may have a flexural modulus of at least 5 MPa, and further may be of a polyphthalamide.



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## TOOTHBRUSH WITH COMBINATION OF BRISTLES, SOFT CLEANSING PAD, AND/OR POLISHING FINGERS

### FIELD OF THE INVENTION

The present invention relates to toothbrushes. The present invention has further relation to such toothbrushes with multiple types of cleaning members applied to the toothbrush head.

### BACKGROUND OF THE INVENTION

Toothbrushing may be accompanied by negative side effects such as irritation, abrasion, and recession of the gums. These problems may be minimized by massaging the gums to stimulate the gingival tissue. There has therefore been a desire to have a toothbrush which provides for the cleaning ability of bristles, along with a massaging or polishing member also located on the toothbrush head to stimulate the gums.

### SUMMARY OF THE INVENTION

Disclosed is a toothbrush 10 comprising a handle 20, including a head 30, the head including a cleaning structure 40, the cleaning structure 40 comprising bristles 50 and a relatively soft cleansing pad 60, or bristles and at least one soft polishing member, or bristles and a relatively soft cleansing pad and at least one soft polishing member.

Further disclosed is an oral brush suitable for massaging the gums, comprising an elongated body, a head portion extending from the body, and a brush portion including a plurality of bristles extending from the head portion, the bristles including a thermoplastic elastomer having a Shore A hardness of at least 30. The oral brush may also include a plurality of bristles of a thermoplastic elastomer selected from the group consisting of polyetheramides, polyesters, styrene-ethylene-butylene-styrene block copolymers, styrene-butadiene-styrene block copolymers, styrene-isoprene-styrene block copolymers, polyurethanes, polyolefin elastomers, and mixtures thereof. The thermoplastic elastomer may have a flexural modulus of at least 5 MPa, and further may be of a polyphthalamide. Lastly, an absorbent pad may be used which includes an active ingredient which is dispersed to human teeth upon use to enhance cleaning and health of the teeth.

### BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject invention, it is believed the same will be better understood from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is an embodiment of a toothbrush head of the present invention, showing bristle tufts surrounding a centrally located soft cleansing pad.

Figure 2a shows an embodiment of the soft cleansing pad of Figure 1, with a contoured surface.

Figure 2b shows an embodiment of the soft cleansing pad of Figure 1, with an alternatively contoured surface.

Figure 3 is an embodiment of the toothbrush head of the present invention, showing a soft cleansing pad with extended bristles protruding therethrough.

Figure 4 is an embodiment of the toothbrush head of the present invention, showing bristle tufts surrounded by soft flexible fingers around a portion of the perimeter of the brush head.

### DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings in detail wherein like numerals indicate the same element throughout the views there is shown in Figure 1 an embodiment of the present invention which includes a soft cleansing pad 60 on a toothbrush head 30 surrounded by bristle tufts 50. The bristle tufts 50 act to clean the teeth surfaces and in between teeth, while the pad 60 acts to help clean and polish teeth surfaces and massage the gums. Figures 2a and 2b show an alternative pad 60 that can be used with the embodiment in Figure 1. Alternative pads may have differing surface configurations depending on results desired; e.g. contoured pad surface 70 may be used to trap abrasive cleaning agent for tooth surface polishing. The pad may also be varied in length, width, and height dimensions, depending on desired results.

Generally, a combination of bristles and a soft pad provide greater coverage and polishing of the flat surfaces of teeth, while the bristles penetrate and clean between teeth and along the gumline. In any event, the pad would trap abrasive cleaning particles between the pad and the teeth for improved surface cleaning, including plaque and stain removal, as well as polishing. Alternatively, the pad can be used just to massage the gums.

Figure 3 shows a pad 60 covering the major portion of the head area. Extended individual bristles 50 are inserted into the head 30 through the pad 60. The pad cleans and polishes teeth surfaces and massages the gums, while the extended bristles clean between teeth and along the gumline. Other variations include variations in pad material stiffness or variations in other pad material characteristics. An active ingredient (e.g. fluoride) may be included in the pad itself, which would be dispersed to the teeth upon use. Ideally, the pad surface could be matched with specific dentifrice abrasives to optimize cleaning and polishing performance.

Referring now to Figure 4, the bristles 50 may be combined with a plurality of soft, polishing finger-like structures 80, typically made of an elastomeric material, or the bristles can be combined with a pad and the fingers. The fingers 80 can be molded at the same time as, and along with, the toothbrush handle 20. The fingers 80 may be made of the same material as the handle 20,

or may be injection molded onto the toothbrush head 30 in a secondary manufacturing step. Variations include the shape of the fingers, location on the brush head, color, stiffness, and material used. The fingers would provide gum stimulation and teeth polishing, while the bristles cleaned the teeth. The combination of standard nylon bristles and soft polymeric fingers in the brush head can be used to more effectively polish teeth and massage gums, while cleaning plaque and stains from teeth surfaces. Another variation includes bristles embedded in and coming out through the fingers, either protruding through the finger tips and extending outward therefrom, or protruding out the sides of the fingers.

While particular embodiments of the present invention have been illustrated and described herein it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the present invention and it is intended to cover in the appended claims all such modifications that are within the scope of this invention.

1. A toothbrush characterized by a handle, including a head, the head including a cleaning structure, the cleaning structure characterized by bristles and a relatively soft cleansing pad.
2. A toothbrush characterized by a handle, including a head, the head including a cleaning structure, the cleaning structure characterized by bristles and at least one soft polishing member.
3. A toothbrush characterized by a handle, including a head, the head including a cleaning structure, the cleaning structure characterized by bristles, a relatively soft cleansing pad, and at least one soft polishing member.
4. An oral brush suitable for massaging the gums, characterized by:
  - an elongated body;
  - a head portion extending from said body; and
  - a brush portion characterized by a plurality of bristles extending from said head portion, said bristles characterized by a thermoplastic elastomer having a Shore A hardness of at least 30.
5. An oral brush characterized by:
  - an elongated body;
  - a head portion extending from said body; and
  - a brush portion characterized by a plurality of bristles extending from said head portion, said bristles characterized by a thermoplastic elastomer selected from the group consisting of polyetheramides, polyesters, styrene-ethylene-butylene-styrene block copolymers, styrene-butadiene-styrene block copolymers, styrene-isoprene-styrene block copolymers, polyurethanes, polyolefin elastomers, and mixtures thereof.
6. An oral brush characterized by:
  - an elongated body;
  - a head portion extending from said body; and
  - a brush portion characterized by a plurality of bristles extending from said head portion, said bristles characterized by a thermoplastic elastomer having a flexural modulus of at least 5 MPa.



7. An oral brush characterized by:

- an elongated body;
- a head portion extending from said body; and
- a brush portion extending from said head portion, characterized by a plurality of bristles further characterized by a thermoplastic elastomer and a plurality of bristles further characterized by a polyphthalamide.

8. An oral brush characterized by:

- an elongated body;
- a head portion extending from said body; and
- a pad portion extending from said head portion, characterized by a relatively soft, absorbent pad further characterized by an active ingredient which is dispersed to human teeth upon use to enhance cleaning and health of the teeth.

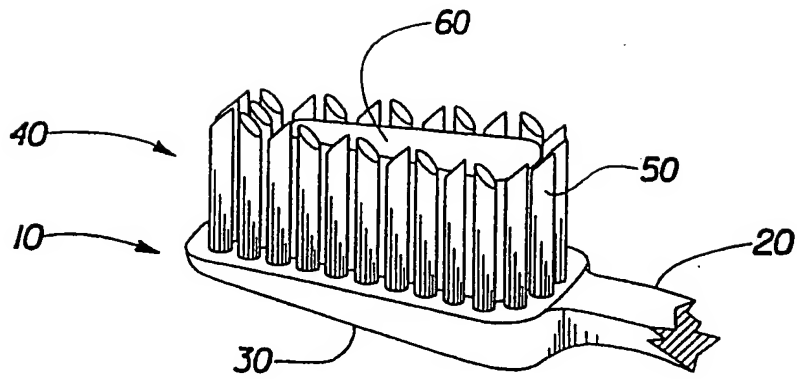


Fig. 1

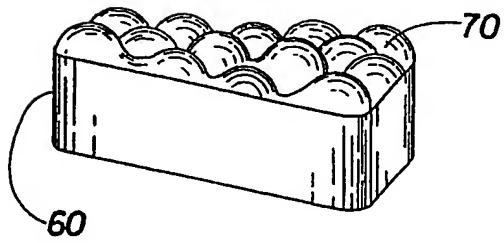


Fig. 2a

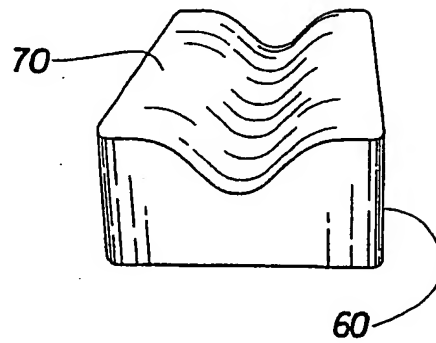


Fig. 2b

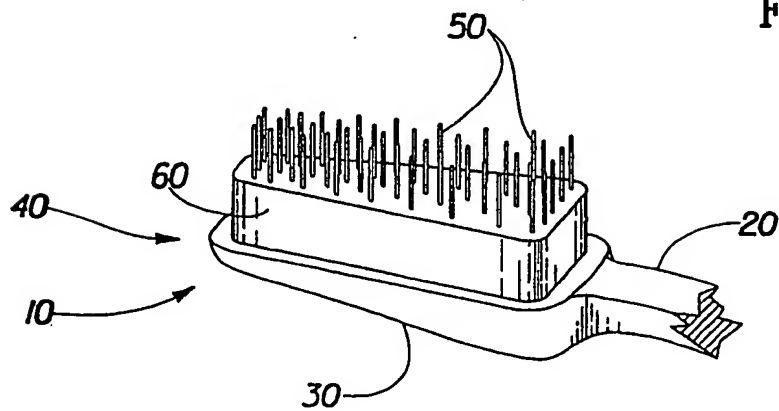


Fig. 3



<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC E A46B9/06		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC E A61H A61C A46B		
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<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	FR 2 636 818 A (TASSINARI) 30 March 1990 see the whole document ---	1-3 7
Y	US 4 617 342 A (POPPE) 14 October 1986 see claims; example 3 ---	7
X	US 2 702 914 A (KITTLE) 1 March 1955 see column 2, line 27 - column 4, line 4; figures ---	1-3,8
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016		Authorized officer  <div style="text-align: center; font-size: 1.2em;">Triantaphillou, P</div>

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/19793

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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